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Rope

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Rope is also the title of a movie by Alfred Hitchcock

A **rope** is a length of fibers woven together to improve strength. It has tensile strength but is too flexible to provide compressive strength (i.e., it can be used for pulling, not pushing). Common materials for rope include: manila, hemp, hair, nylon, and steel. Rope has been an important element in construction work since prehistoric times. Today, wires have supplanted rope in heavy construction and industrial applications because of higher tensile strength. Rope remains instrumental in activities as sailing and climbing.

In order to fasten ropes, a large number of knots are used. Some rope material, like hemp, is stronger when wet with water.

A pulley is used to convert the pulling force to another direction. Winches and capstans are machines designed to pull ropes.

Styles of rope construction

Ropes used for climbing can be divided into two categories: dynamic ropes and static ropes. Static ropes have very low stretch properties, they are used for carrying equipment, hauling equipment, and attaching pieces of equipment together. Dynamic ropes are stretchy; being stretchy is crucial in order to limit the maximum force experienced by a climber that falls when using one (and also the maximum force experienced by any piece of gear securing the climber to the rock or ice). The main ropes (called "lead ropes" when the climber is leading) that a climber uses are dynamic.

Climbing ropes are generally made from nylon and have kern mantle construction. There is a core, kern, of long twisted fibres in the middle, and an outer sheath, mantle, of woven coloured fibres. The kern

provides most of the strength, the mantle protects the kern and generally affects the handling of the rope (how easy it is to hold, to tie knots in, and so on). Dynamic ropes are made by chopping the fibres in the kern to make them shorter which makes the rope more stretchy.

How to handle rope

Rope made from hemp or nylon should be stored in a cool dry place. It should be coiled and not twisted. If rope is found to be fraying you can melt some wax onto the end or in the case of nylon rope just melt the end so it fuses together. For fibre rope, fixing frayed ends can be more difficult. A strong cotton should be used to lash the end together; this will help the end from coming apart again and make tying knots easier. If a load-bearing rope gets a sharp or sudden jolt or shows signs of deteriorating the rope should be replaced immediately and should be discarded or only used for non-load-bearing tasks.

Books about 'Rope' at: amazon.com or amazon.co.uk

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